Lesson Plan 2

Week 8

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EDTC 614

Title – Nuclear Chemistry Research Project

Overview of lesson – This lesson entails the use of technology in the exploration to the topic of nuclear chemistry. A topic list has been compiled and the students will choose the subject they wish to investigate. The students will use the Internet to gather information. Additionally the students will use the application google earth to show pictures of the regions affected by the disasters and gather information about the after effects. Lastly, the students will present their findings in a brief presentation.

Resources – Computer lab or mobile computing cart, access to Internet, prior lesson on the nuclear chemistry, application Google Earth, presentation software .

NETS – S Standards

* 1. a – Apply existing knowledge to generate new ideas, products or processes.
* 1. b – Create original works as a means of personal or group expression.
* 2.a – Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media
* 2. b – Communicate information and ideas effectively to multiple audiences using a variety of media and formats.
* 3. a - Plan strategies to guide inquiry.
* 3. b – Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.
* 3. c – Evaluate and select information sources and digital tools based on the appropriateness to specific tasks.
* 3. d – Process data and report results.
* 4. b – Plan and manage activities to develop a solution or complete a project.
* 5. a – Advocate and practice safe, legal and responsible use of information and technology.
* 5. b – Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.
* 6. b - Select and use applications effectively and productively.
* 6. d – Transfer current knowledge to learning of new technologies.

District Goals addressed – As addressed in CCSD Teaching and Learning Project.

* 1b – Use assessment to diagnose student learning.
* 1c – Gather, select, and prepare resources.
* 1b, 2a, 3a, 3c – Demonstrate knowledge of content and culturally responsive pedagogy.
* 3c – Engage students in learning.
* 1e – Use a variety of assessment techniques; assess student engagement and academic progress.

CCSD High School Science Standards –

* S1.2 – Select and use appropriate technologies to gather, process, and analyze data and to report information related to an investigation.
* S1.4 – Recognize and analyze alternative explanations and models.
* Science Standard 2 – Students know and understand common properties, forms, and changes in matter and energy.

Student learning objectives

* Students will use a variety of media to display knowledge of the topic chosen related to nuclear chemistry.
* Students will cite sources of information to show digital citizenship.
* Student will compose a research paper devoted to their chosen topic.

Learning Activities – Prior to this lesson, an introduction to nuclear chemistry must be taught. This lesson should be used as a summative assessment to show the knowledge gained from research of the topic.

1. Introduce the concept of the nuclear chemistry to chemistry students.
2. Discuss the research project and the significance to nuclear chemistry.
3. Go over guidelines for the project and how they will be graded. This also includes the citation of sources.
4. Demonstrate to students how to use google earth to gather information about the region where a nuclear event occurred.
5. Establish timelines for project completion.
6. Allow class time for presentation of projects.
7. Evaluate projects and presentations and give feedback to students allowing for improvements to be made.

You project today will be to research a significant nuclear event that happened in the past. Additionally you must provide information using google earth to detail where the event took place. Images will be used to show a global scale, then a more specific region on the world. Additional items that must be present include the significance of the event that took place and the impact the nuclear event had on the region environmentally and financially. Finally, you will give a short 3-5 minute presentation using visuals to show your classmates what you have learned. The presentation can be in any digital mode you choose, but it does have to be digital as you will use a projector to display your visuals and you will submit you final presentation and paper digitally.

1. Choose a topic from the list below and get approval from your teacher.

Chernobyl

Hiroshima

Nagasaki

Tomsk-7

Goiania Accident

Three Mile Island

Discovery of Radioactivity

Manhatten Project

Bikini Atoll

Windscale Nuclear Incident

Idaho Falls

La Hague Nuclear Reprocessing

Leningrad Power Plant

First Nuclear Test

Nuclear test “Bravo”

Browns Ferry

Wuegassen

Kola Nuclear Power Plant

Hanford

Rocky Flats

Nuclear Sub “Daniel Boone”

Hydrogen Bombs

Superphenix Fast Breeder Reactor

Fermi Fast Breeder Reactor

Chalk River Cananda

Kyshtym

Saint Laurent

Tokaimura Reprocessing Plant

Norway (heavy water)

1. Research your topic using the internet. Remember to cite your sources. Additionally use Google Earth to locate information about the place where your event took place. You will be required to turn in a 2-3 page research paper complete with a citation page that is not counted.
2. Along with a research component, you will also be required to present your findings to the class in a 3-5 minute presentation about your topic. You will be required to have a visual component which will aid in your discussion of your research.

Scoring guidelines

Research Paper

|  |  |  |  |
| --- | --- | --- | --- |
|  | Unsatisfactory (0pts) | Proficient (5pt) | Advanced (10pts) |
| Proper use of citations | Student does not include citations | Student includes source information, but not in correct format | Student citations are in correct format and complete |
| Appropriateness of images | Images used do not relate to the he place where event happened. | Images related to the nuclear event, but some may be not meeting criteria stated in directions | All images related to nuclear event are appropriate and meet all criteria stated in directions. |
| Explanation of topic | Student cannot explain why main pints about nuclear event. | Student has many facts about content, but some may be wrong. | Student can correctly give factual information about topic. |
| Project completed within timeline | Project more than 1 week late | Project complete 1 to 2 days beyond due date | Project completed before due date. |

Presentation

|  |  |  |  |
| --- | --- | --- | --- |
|  | Unsatisfactory ( 0pts) | Proficient ( 5pts) | Advanced (10pts) |
| Visual explanation | Student cannot correctly explain why event relates to visual. | Student can correctly explain the event and relate most visuals to presentations. | Student can correctly speak about event and identify how all visuals relate to each other. |
| Technology usage | The use of technology is lacking structure or continuity. | The use of technology uses the platform chosen well and with a few new features. | The use of the technology is innovative in the use of how the material is presented and uses functions of the technology that are advanced. |
| Overall presenting skills | Presenter not using clear communicative skills. | Presenter can be heard by most students and or using bad grammar for explanation | Presenter can clearly be heard throughout the class and is using proper grammar |

Adaptations –

Special needs – Student can be allowed to present only to instructor.

Project can be shortened to appropriate length for student.

Individual attention can be given to special needs student to assure success.

Advanced students – Students can combine different presentation tools together for more complete project.

Student can investigate other online media source for use to present materials.